

# **ATLANTIC POPULATION CANADA GEESE: RECRUITMENT AND BREEDING GROUND BANDING**

## **A Progress Report for 2003**

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*In 2003 studies on reproductive success and recruitment of Atlantic Population Canada Geese continued in the Ungava region of northern Quebec. This was the eighth consecutive year of work including a seventh year of intensive studies at a field camp near Povungnituk on Hudson Bay. Reproductive output of this population was good in 2003 in the Hudson Bay portion of the breeding range as well as in areas around Ungava Bay. Production was higher than in 2002 (a year with very late snow melt) but similar to production in 2001. A total of 9992 geese were banded in 2003.*

### **Work conducted in 2003:**

Intensive investigations on breeding success were conducted at a site near Povungnituk on the Hudson Bay coast for a seventh consecutive year. A crew of between six and nine biologists, technicians and students were present at the 35 km<sup>2</sup> Polemond River study area from 17 May - 11 August 2003. Nests were located within walking distance of the camp during the egg-laying period and re-visited at hatch to check nest success and mark goslings with web-tags. We also continued less intensive studies at several smaller (mostly < 1 km<sup>2</sup>) secondary sites near Hudson Bay (n=7) and Ungava Bay (n=5). We travelled to each site using a helicopter and located a total of 273 and 225 nests at the Hudson Bay and Ungava Bay secondary sites, respectively. We returned in late July/early August to check nest success.

We monitored small mammal populations in mid July. Trapping was conducted at two sites near the Polemond River camp using 50 snap traps for a period of 10 days at each site. Observations of Arctic fox and other predators were recorded daily throughout the nesting period.

We banded brood flocks of Canada geese along the northern Hudson Bay coast and along the south and west coasts of Ungava Bay from 29 July to 11 August. Two crews of 4-5 persons each operated independently using helicopters in the Hudson Bay area and one crew operated in the Ungava Bay area. When conditions were favourable, each crew conducted 4-5 catches per day. One of the Hudson Bay crews concentrated on catching geese near the Polemond River study area in order to re-capture web-tagged goslings for assessment of growth and pre-fledging survival. In 2003, both the Hudson Bay and Ungava Bay crews participated in a one-year band return rate study for AP Canada Geese.

### Preliminary results:

The winter of 2002-2003 was colder than usual, resulting in very thick ice on lakes as well as on Hudson Bay itself. Upon our arrival at the study area on the Polemond River on 17 May, ground snow cover was approximately 75%. Temperatures in the second half of May were mild and snowmelt was rapid; we were able to begin searching for nests on 24 May (2 weeks earlier than in 2002). The first half of June was cold and wet; daily maximum temperatures rarely exceeded 4° C. Fortunately temperatures returned to seasonal norms by the time hatching began near the end of June. The mean hatching date in 2003 was 26 June. In 2003, 675 nests were found in the principal study area, resulting in a density of 19.6 nests per km<sup>2</sup>. This is the highest density recorded in the seven years of intensive study. With respect to clutch sizes, in the principal study area the mean clutch size in 2003 was 4.5 eggs. Mean clutch sizes at the secondary sites were similar, 4.3 for the Hudson Bay sites and 4.4 for the Ungava Bay sites (Tables 2 and 3). Nest success was also higher in 2003 than in past years, 77% as compared to a yearly average of 66% for 1997-2003. Overall productivity (number of goslings per km<sup>2</sup>) was also the highest recorded since the study began (Table 4).

**Table 1. Reproductive parameters for Atlantic Population Canada Geese at the Polemond River study area, northern Hudson Bay region, Quebec, 1997-2003.**

	1997	1998	1999	2000	2001	2002	<b>2003</b>	Mean (1997- 2003)
No. Nests	292	348	423	383	639	325	<b>675</b>	441
Nest Density (no./km <sup>2</sup> )	9.6	9.8	12.3	11.1	18.5	9.4	<b>19.6</b>	12.9
Mean Nest Initiation Date	29 May	20 May	22 May	31 May	23 May	11 June	<b>28 May</b>	28 May
Total Clutch Laid	4.98	5.29	4.65	4.05	4.48	3.63	<b>4.52</b>	4.52
Clutch Size at Hatch	4.47	4.72	3.75	3.47	4.30	3.06	<b>3.96</b>	3.95
Goslings Leaving Nest	4.16	4.26	3.45	2.98	3.73	2.71	<b>3.51</b>	3.55
Mayfield Nest Success (%)	82	89	61	20	82	51	<b>77</b>	66

**Table 2. Reproductive parameters for Atlantic Population Canada Geese at Hudson Bay sites, Quebec, 1996-2003.**

	1996	1997	1998	1999	2000	2001	2002	<b>2003</b>	Mean (1996- 2003)
No. Nests	58	123	127	130	157	228	167	<b>273</b>	158
Nest Density	43.7	73.6	80.1	68.0	76.0	120.0	77.8	<b>113.4</b>	81.6
Mean Nest	8	28	21	24	1	23	9	<b>1</b>	29
Initiation	June	May	May	May	June	May	June	<b>June</b>	May
Mean Clutch Size	3.54	4.50	4.68	4.20	3.89	4.52	3.21	<b>4.26</b>	4.10
% Nest Success	74	78	91	80	48	85	67	<b>75</b>	75

**Table 3. Reproductive parameters for Atlantic Population Canada Geese at Ungava Bay sites, Quebec, 1996-2003.**

	1996 <sup>1</sup>	1997	1998	1999	2000	2001	2002	<b>2003</b>	Mean (1997- 2003)
No. Nests	16	28	61	113	80	181	185	<b>225</b>	125
Nest Density	3.3	14.2	21.2	67.1	38.4	40.7	19.4	<b>16.7</b>	31.1
Mean Nest	4	25	24	25	2	20	11	<b>18</b>	27
Initiation	June	May	May	May	June	May	June	<b>May</b>	May
Mean Clutch Size	3.89	4.36	4.22	4.07	3.73	4.13	3.43	<b>4.31</b>	4.04
% Nest Success	13	65	82	64	42	51	29	<b>59</b>	56

<sup>1</sup> only one site visited in 1996

**Table 4. Productivity Index (gos/km<sup>2</sup>) of Atlantic Population Canada Geese at Polemond River, northern Hudson Bay region, Quebec, 1997-2003.**

Year	NEST DENSITY	X	NEST SUCCESS	X	GLN	X	GOSLING SURVIVAL	=	PRODUCTIVITY
1997	9.6		.823		4.16		.589		19.4
1998	9.8		.886		4.26		.571		21.1
1999	12.3		.613		3.45		.634		16.5
2000	11.1		.204		2.98		.417		2.8 <sup>1</sup>
2001	18.5		.817		3.77		.475		27.1
2002	9.4		.508		2.71		.584		7.6
2003	19.6		.774		3.51		.570		30.4

<sup>1</sup> May be overestimated relative to other years: the *proportion* of marked broods recaptured at banding was much lower than average suggesting that the rate of total brood loss may have been high.

Small mammals were abundant in the main study area in 2003. In a two-week period in mid July (n=1,030 trap-nights [TN]), 30 microtines (primarily Ungava Lemmings) were caught; this number is slightly less than the number caught in 2002 (n=32) but over three times the previous yearly high of 8 that were caught in 1998. For 2002 and 2003, the index of abundance was calculated at 3.16 and 2.91/100TN, respectively, whereas for 1997-2001 this index ranged between 0.48 and 0.85/100TN.

A total of 1599 goslings were marked in the nest with web tags in 2003. Of these, 277 were recaptured during banding drives.

In 2003 the pre-determined banding goals for both Hudson Bay (2000 adults) and Ungava Bay (1000 adults) were achieved (Table 5).

**Table 5. AP Canada Geese banding in northern Quebec, 1997-2003.**

Geese Banded	1997	1998	1999	2000	2001	2002	<b>2003</b>	Total
<b><u>Hudson Bay</u></b>								
Young banded	793	2,461	3,314	1,334	4,103	2,546	<b>3,736</b>	18,287
Adults banded	355	1,360	2,018	1,285	1,845	2,012	<b>2,092</b>	10,967
<b><u>Ungava Bay</u></b>								
Young banded	1,082	1,332	1,200	896	1,568	1,541	<b>2,713</b>	10,332
Adults banded	916	675	1,039	1,032	943	1,103	<b>1,451</b>	7,159
<b>Total</b>	3,146	5,828	7,571	4,547	8,459	7,204	<b>9,992</b>	46,747

### **Conclusion and plans for 2004:**

The 2003 breeding season was a good year in terms of nesting effort and success. Nest density in the principal study area was the highest ever recorded since the study began in 1996. Nesting success was higher than the long-term average (1997-2003), whereas the timing of nesting and clutch sizes were equal to the long-term averages. The recent closure and gradual re-opening of sport hunting on this population appears to have been a good success. The population continues to increase and is probably now higher than at any time in the last 10-15 years.

Our knowledge of this population has expanded dramatically since the work began in 1996 and in the past three field seasons we witnessed a year of very low breeding success, a year of massive reproductive output, and a year of moderate breeding output. In addition to research on breeding ecology, we also conducted breeding ground banding over the past six years. This has been very successful with nearly 47,000 geese banded to date. The banding operations and reproductive studies have neatly dove-tailed enabling us to reduce costs and to obtain data on productivity over a broad geographic area and on growth and survival of goslings.

With the 2001 season, we completed the five years of intensive studies on reproductive success that were called for in the Atlantic Flyway Council's original Co-operative Research Program for Atlantic population Canada geese. At the end of 2001, a new five-year research and monitoring program was approved by the Atlantic Flyway Council and called for continued full funding for the recruitment study for two additional years (2002/03 and 2003/04). We have now completed the full seven years of intensive studies. For the remaining three years of the new plan, breeding ground banding and a program to monitor nesting (based on the secondary sites that are currently visited twice annually) will be funded. We had a very successful 2003 season, and our plans for 2004 are to continue the studies on reproductive success and breeding ground. Monitoring small mammal and predator populations will be maintained.